

REMARKS/ARGUMENTS

I. General Remarks

Please consider the application in view of the following remarks.

II. Disposition of Claims

Claims 1-14, and 16-79 are pending in this application. Claims 38-56 and 62-79 have been withdrawn previously. In this Response, Applicant has amended claims 1, 17, 26, 57, and 61, and has canceled claim 28.

III. Claim Rejections—Claims 1-37, 57, and 59-61

The Examiner has maintained his rejection of claims 1-14, 16-57 and 59-61 under 35 U.S.C. 103(a) as obvious from U.S. Patent No. 5,990,050 to Patel in view of “Amphiphilic Copolymers,” Langmuir 1998, 14, 5977-79 (Perrin). The Examiner has quoted from Patel:

“Wetting agents and emulsifiers that may be suitable for use in this invention include, crude tall oil, surfactants, organic phosphate esters, modified imidazolines and amidoamines, alkyl aromatic sulfates and sulfonates, and the like, and combinations or derivatives of these. Versawet.RTM. and Versacoat.RTM. and Novamul are *examples of commercially available emulsifiers* manufactured and distributed by M-I, L.L.C. that may be used in this invention. Silwet L-77, L-7001, L7605 and L-7622 are *examples of commercially available surfactants and wetting agents* manufactured and distributed by Union Carbide Chemical Company Inc.” [Emphasis added by Examiner.]

The Examiner has then stated:

Accordingly, it is expressly clear from the cited disclosure that Patel contemplated the composition containing emulsifiers that are distinct from surfactants. Examiner also notes that independent claims 1 and 12 in Patel limit the composition to contain an emulsifier and does not require a surfactant. Thus, Patel contemplated embodiments wherein the disclosed fluid composition does not require the invert emulsion to contain a surfactant.” [Emphasis added] [sic]

Furthermore, as discussed previously in FOA, paragraph [0030] on page 13 of Applicant’s specification discloses:

“[0030] Other types of emulsion additives . . . optionally may be added to the emulsion compositions of the present invention including, but not limited to, weighting agents, *wetting agents*, fluid loss agents, viscosifying agents, thinning agents, lubricants, anti-oxidants, *surfactants that are suitable for a purpose other than stabilizing an emulsion*, corrosion inhibitors, scale inhibitors, and the like. When used in certain applications, the emulsion compositions of the present invention may include particulates such as proppant or gravel. One of ordinary skill in the art with the benefit of this disclosure will recognize the appropriate type of additive for a particular application.” [Emphasis added].

Therefore, because Patel discloses the emulsifying agent can be, e.g., a wetting agent (or other non-surfactant emulsifying agent) and applicant’s specification discloses wetting agents (and some surfactants) as an example of an emulsion additive for the claimed invention, then Patel meets the “surfactant-free” limitation of the instant claims as they are interpreted in accordance with the applicant’s specification.

Applicant traverses the Examiner’s rejections for the reasons stated in response to the previous office actions, incorporated herein by reference, and for the further reasons set forth below.

Applicant respectfully submits that the Examiner’s quotation of paragraph [0030] from Applicant’s specification causes confusion because this paragraph is directed to other additives that may be used in the composition of the invention, and is not directed to the novel components of the invention, which is apparent when Applicant’s specification is read as a whole as the law requires. Further, the Examiner has not addressed Applicant’s previous response that NOVAMUL, which is in Patel’s list of examples of “wetting agents” is in fact a surfactant, as taught by Patel in another patent by the same inventor, Arvind D. Patel, and filed less than a year earlier than the patent reference cited by the Examiner herein, that other patent being U.S. 6,218,342, where this same inventor states in column 9 at lines 59-60, that “NOVAMUL is a amidoamine surfactant available from M.I. Drilling Fluids.” Nor has the Examiner addressed Applicant’s position that the Patel independent claims referenced by the Examiner as referring to

an “emulsifier” cannot fairly be construed, as the Examiner has done, to mean a teaching or suggestion that the emulsifier may be something other than an emulsifier commonly known to the industry at the time. Patel includes no dependent claims further limiting the “emulsifier.” All of the examples provided by the Patel reference employ surfactants as emulsifiers. The listing, at column 5, at lines 10-22, in the Patel reference, that: “Wetting agents and emulsifiers that may be suitable for use in this invention include, crude tall oil, oxidized crude tall oil, surfactants, organic phosphate esters, modified imidazolines and amidoamines, alkyl aromatic sulfates and sulfonates, and the like, and combinations or derivatives of these,” is not believed to be an unusual listing in the art at the time.

Even accepting *arguendo*, or for the sake of argument without admission, that Patel’s teachings concerning an emulsifier do not limit the emulsifier to a surfactant, there is nothing in the Patel reference that suggests use of a polymer as taught by Applicant for stabilizing an invert emulsion. And notwithstanding the Examiner’s conclusions to the contrary, there is nothing in the Perrin reference that suggests utility of a polymer as taught by Applicant for stabilizing an invert emulsion for utility in methods for treating subterranean formations.

With respect to Perrin, the Examiner states:

In response to Applicant’s argument that Perrin is nonanalogous art, as discussed in FOA, Patel is drawn to water-soluble invert *emulsions* (see title). Perrin teaches a new route to prepare ordered monodisperse *emulsions* (see title). Accordingly, a person of ordinary skill in the art would look to scientific/technical journal articles regarding emulsion technology to solve problems regarding the use/application of emulsions in industries, such as in oil drilling technology. Examiner notes again that Applicant listed the Perrin reference on page 5, lines 10-11 in the Information Disclosure Statement filed July 19, 2004.

Applicant respectfully submits that the law requires that the Examiner go beyond the title of the references and consider the references as a whole in light of Applicant’s invention disclosure as a

whole. *Takeda Chem. Indus. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1356-57 (Fed. Cir. 2007) (In cases involving new chemical compounds or compositions, it “remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness” of a new claimed compound or composition.); *Hartness Int'l, Inc. v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1108, 2 USPQ2d 1826, 1832 (Fed.Cir.1987); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 U.S.P.Q. 81, 93 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

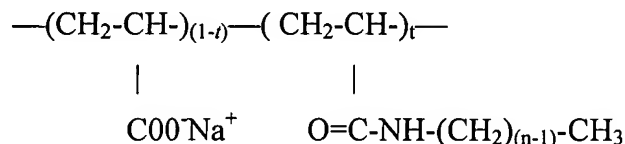
That Applicant cited the Perrin reference in an Information Disclosure Statement means nothing more than that Applicant or his legal counsel (who are not persons of ordinary skill in the art) were aware of the reference at the time it was submitted to the Patent Office and believed that someone might consider the reference material to the patentability of the invention or to the allowance of the claims, or of possible relevance to the Examiner's examination of the application. The submission does not mean and cannot lawfully be construed to mean that Applicant was aware of the reference at the time of his invention or that Applicant considers the reference to be one from which his invention is obvious. In fact, Applicant DOES NOT consider his invention obvious from Perrin alone or in view of Patel.

When Perrin is considered as a whole, as the law requires, Perrin's teachings are understood to be directed to “ordered monodisperse macroemulsions.” Perrin states on page 1:

Although techniques exist for producing a porous three-dimensional periodic solid with pore diameters smaller than approximately 40 nm, there is no general method to create such materials with pore diameters comparable to optical wavelengths. The latter would have important technological uses as materials with photonic bandgaps and optical stop-bands. A prerequisite for the production of such ordered macroporosity in solid materials is the formation of ordered monodisperse macroemulsions. As shown recently in a very elegant way, specific treatments of ordered liquid-liquid dispersions yield solid porous materials with monodisperse spherical pores after removal of the emulsion droplets

In this work, we report a novel route for creating an almost perfect crystal of micrometer size, soft, deformable entities, using simple techniques and unusual ingredients. More specifically, we describe an approach to the preparation of ordered monodisperse macroemulsions with a method combining the use of very small quantity (4% (w/w) in the continuous phase) of an easy-to synthesize, nontoxic, new emulsifier and a simple shear in-situ emulsification procedure.

The polymeric surfactant is a hydrophobically modified poly (sodium acrylate) and its chemical structure reads as follows:



n is the number of carbon atoms of the hydrophobic grafted moiety and t is the degree of grafting in mol%. Although polymers with a broad range of t and n were synthesized, the discussion in this paper is restricted to the macrosurfactant with $t=10\%$ and $n=12$. The hydrophobic alkyl chains chemically grafted onto the negatively charged polymer backbone are randomly distributed and the molecular weight of the polymer is 50,000 g/mol. Details of the grafting reaction synthesis as well as the viscometric properties of aqueous polymer solutions were reported previously.

Thus, Perrin is concerned with an entirely different problem than Applicant. Perrin is concerned with “ordered monodisperse liquid-liquid dispersions” with “pore diameters comparable to optical wavelengths” for uses “as materials with photonic bandgaps and optical stop-bands.” Moreover, the “polymer surfactant” taught in Perrin is different from the polymers used in Applicant’s invention, having not only a different composition, but a significantly lower molecular weight--approximately half that of Applicant’s polymers as presently claimed.

The Examiner’s statement that the differences in Perrin’s polymeric emulsifier and Applicant’s polymeric emulsifier would be obvious is conclusory and not supported by the Examiner’s statement or explanation that, “Perrin teaches advantages of macromolecule emulsifiers over surfactants {“teaching away” from the use of surfactants) and suggests to one skilled in the art to combine Patel and Perrin, to provide a resultant uniform and stable emulsion

as discussed in item 8 of FOA.” Even with such a combination, one would not have Applicant’s invention or even the compositions used in Applicant’s invention.

To expedite prosecution of this patent application, Applicant has amended his independent claims 1, 26, 57, and 61 to be limited to methods using ethylacrylate/methylacrylic acid polymeric emulsifiers having molecular weights of about 100,000. Applicant believes that, with these limitations, his polymeric emulsifiers are without question significantly different from any emulsifiers taught in Perrin or in Patel. The Examiner’s position that the characteristics and behavior of the compositions in Applicant’s invention are “obvious” from the “same” composition of Patel in combination with Perrin should therefore be rendered moot. Applicant reserves his right to pursue similar or broader claims without these specific limitations in a continuation or divisional patent application.

IV. Claim Rejections—Claim 58

The Examiner has maintained his rejection of claim 58 as obvious from Patel in view of Perrin and in further view of Kokal’s “Crude Oil Emulsions: A State of the Art Review.”

The Examiner has stated:

As discussed in FOA, Patel does not expressly disclose the composition comprising a breaker. Kokal teaches breakers are commonly used in the art for chemical demulsification. Kokal, in combination with Patel, thus supplies this missing limitation regarding the breaker because it is suggested in the art to do so to provide effectiveness in producing fluids. (See, OA, lines 1-11).

As discussed in item 9 of FOA, Kokal was cited as a secondary reference to show the commonality of adding a breaker to a drilling fluid in the oil field art. Whether or not Kokal uses said breaker for a different purpose as argued by Applicant (i.e., crude oil emulsions in Kokal as opposed to the emulsion-based drilling and well treatment fluids of the instant invention) is not relevant as to whether it would have been obvious to a person skilled in the art, at the time of the instant invention, to add a breaker to the composition disclosed in Patel due to the commonality of using breakers to demulsify an emulsion/foam in oil drilling/treatment fluids as taught by Kokal.

Thus, the instant claims remain unpatentable over Patel and Perrin.

Applicant respectfully traverses this rejection for the reasons stated in response to the previous office actions, incorporated herein by reference, and for the further reasons provided herein. Applicant also respectfully traverses the Examiner's summary dismissal of Applicant's explanation that Kokal is directed to entirely different emulsions from those of concern with respect to Applicants' invention. Applicant respectfully submits that the law requires the Examiner to consider the teachings of the Kokal reference as a whole, and that when one does so, the reference has no relevance to Applicant's invention.

Moreover, Applicant respectfully submits that this rejection is improper for the same reasons that the Examiner's rejections of the other claims are improper, as discussed above. Claim 58, dependent on claim 57, is not obvious from Patel and Perrin for the same reasons stated above that claim 57 is not obvious from Patel and Perrin. The addition of Kokal adds nothing to render dependent claim 58 obvious when claim 57 is not obvious.

SUMMARY

Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. §103, submitting that even if one combined the teachings of Patel with Perrin or of Patel with Perrin and Kokal, one would still not have the benefit of Applicant's invention without Applicant's teachings.

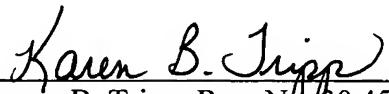
Applicant respectfully submits that the Examiner's conclusion that the combination of the references renders Applicant's invention obvious is erroneous. Each of the references that the Examiner cited is directed to a different problem as well as a different solution to the problem than is Applicant's invention. The references never suggest application of their teachings to

stabilizing invert emulsion drilling fluids and well treatment fluids using a polymeric emulsion stabilizer or emulsifier instead of a surfactant emulsifier.

Applicant respectfully requests the Examiner reconsider his position, the references as a whole, and Applicant's claims as amended. Applicant respectfully submits that this response is fully responsive to the Examiner's office action and Applicant respectfully requests the Examiner to allow the application to proceed to issue. In the event that the Examiner has objection to any of the claims that might be resolved by an Examiner's amendment, Applicant respectfully requests the Examiner telephone the undersigned counsel regarding same to expedite issuance of a patent.

Respectfully submitted,

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